Express Mail No.: EL 747201684 US
Applicant: Aleksandra Smiljanic
Title: LOAD BALANCING ALGORITHMS IN
NON-BLOCKING MULTISTAGE PACKET
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Fig. 1. Clos switching fabric

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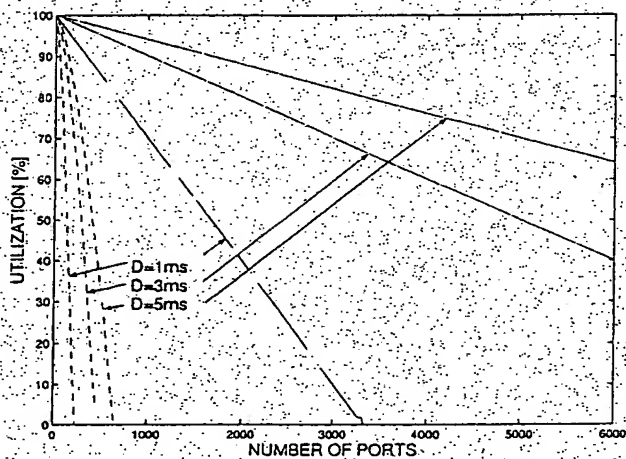NON-BLOCKING MULTISTAGE PACKET
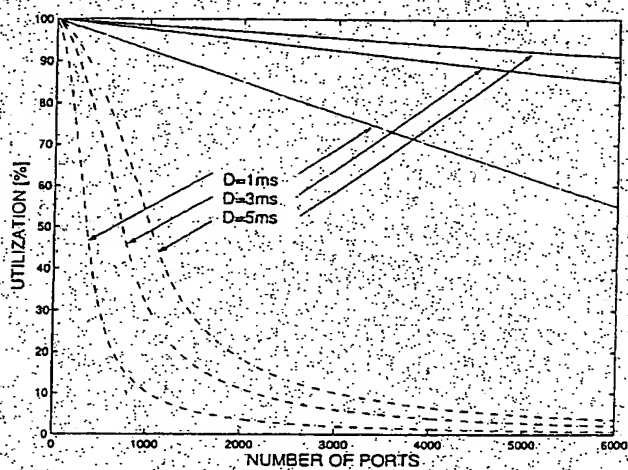SWITCHES
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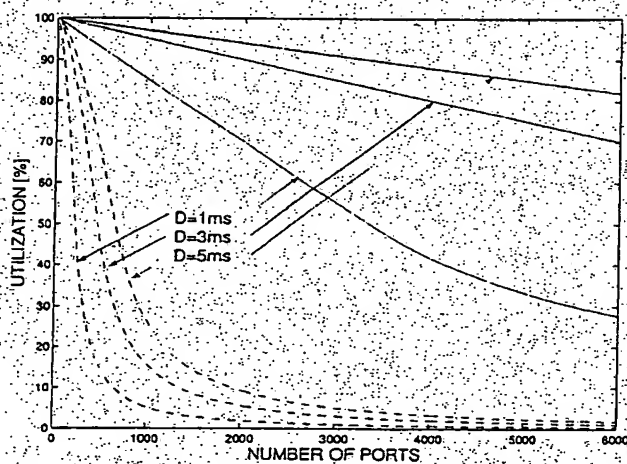Page 2 of 6
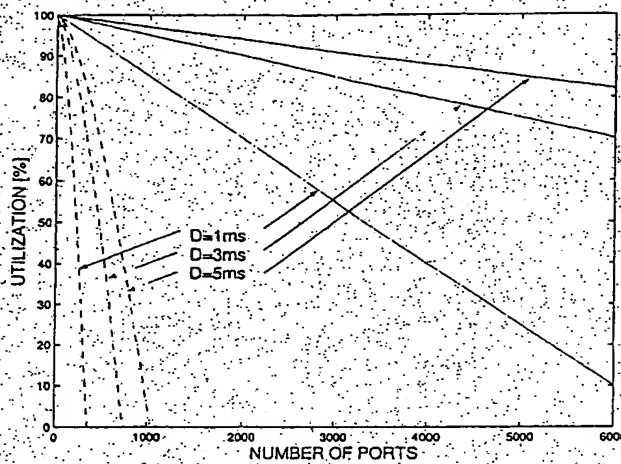
(a) $T_c = 50\text{ns}$

(b) $T_c = 100\text{ns}$

Fig. 2. Switch utilization: solid curves represent the algorithm in which inputs balance flows bound for output SEs, and to the algorithm in which input SEs balance flows bound for outputs; dashed curves correspond to the algorithm in which inputs balance flows bound for outputs.

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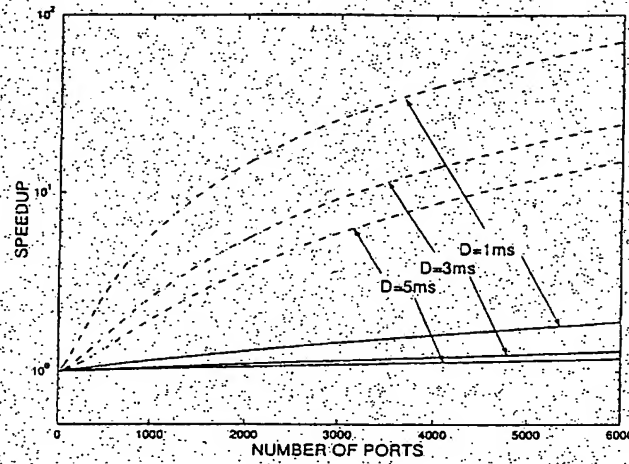Our Docket: 1209-37
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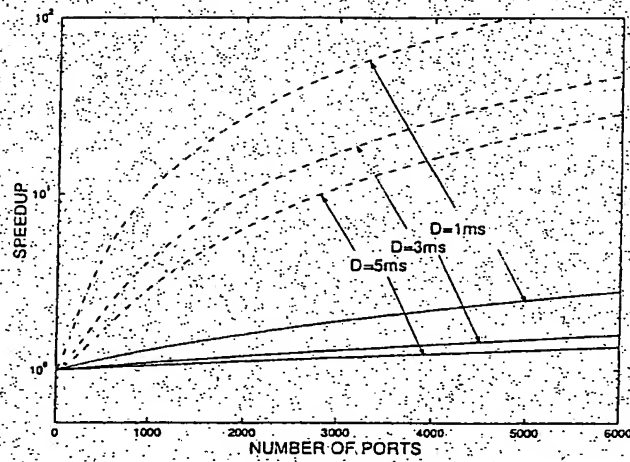
(a) $T_c = 50\text{ns}$

(b) $T_c = 100\text{ns}$

Fig. 3. Switch utilization when counters are reset each frame: solid curves represent the algorithm in which inputs balance flows bound for output SEs, and to the algorithm in which input SEs balance flows bound for outputs; dashed curves correspond to the algorithm in which inputs balance flows bound for outputs.

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(a) $T_c = 50$ns

(b) $T_c = 100$ns

Fig. 4. Non-blocking switch speedup: solid curves represent the algorithm in which inputs balance flows bound for output SEs, and to the algorithm in which input SEs balance flows bound for outputs; dashed curves correspond to the algorithm in which inputs balance flows bound for outputs.
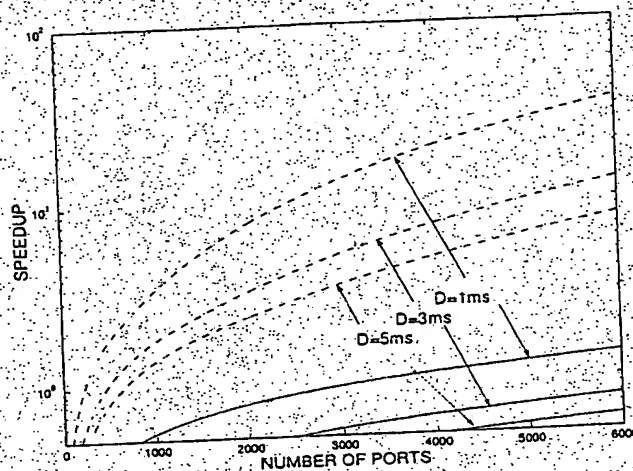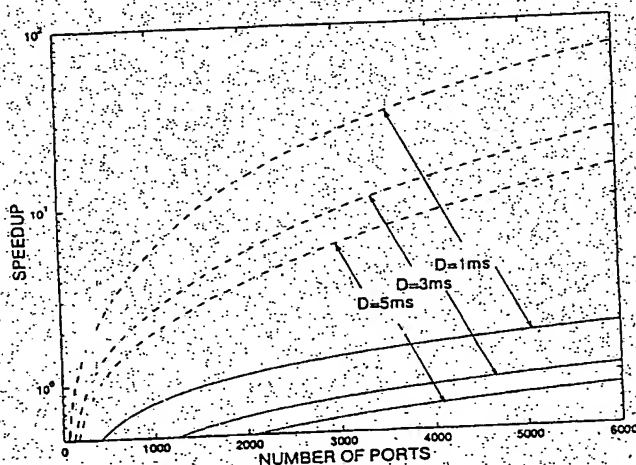
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(a) $T_c = 50$ns

(b) $T_c = 100$ns

Fig. 5. Non-blocking switch speedup when the counters are synchronized: solid curves represent the algorithm in which inputs balance flows bound for output SEs, and to the algorithm in which input SEs balance flows bound for outputs; dashed curves correspond to the algorithm in which inputs balance flows bound for outputs.

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SWITCH

(a)

SB=0	SB=1	SB=0	SB=1	SB=0	SB=1
k	k+1	k+2	k+3	k+4	k+5

PORT
Right Sync

(b)

FB=1	FB=0	FB=1	FB=0	FB=1	FB=0
m	m+1	m+2	m+3	m+4	m+5

PORT
Wrong Sync

(c)

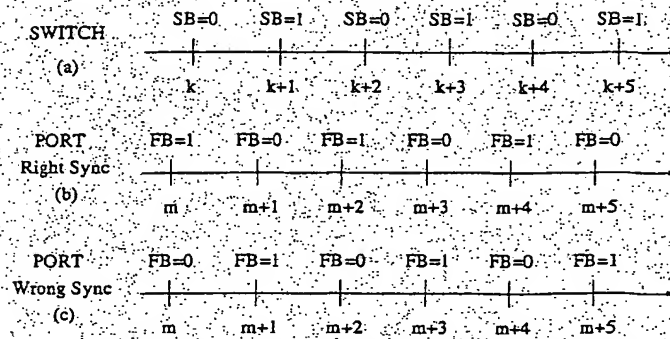| FB=0	FB=1	FB=0	FB=1	FB=0	FB=1
m	m+1	m+2	m+3	m+4	m+5

Fig. 6. Synchronization of the packet scheduling